Union Station Viaduct (Northeast Corridor Project)
Spanning Gaspee, Francis, Promenade
and Canal Sts.
Providence
Providence County
Rhode Island

HAER RI-14

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

PHOTOGRAPHS

Historic American Enigneering Record
National Park Service
Department of the Interior
Washington, D.C. 20240

HISTORIC AMERICAN ENGINEERING RECORD

RI-14

UNION STATION VIADUCT

Date: Various periods of construction between 1892 and 1909

Location: Spanning Gaspee, Francis, Promenade and Canal Sts., Providence, Providence County, Rhode Island.

Owner: Amtrak

Significance: In the late 19th century the city of Providence began filling in its tidal basin and undertook construction of a new Union Station Complex. A viaduct, utilizing a series of box-girder bridges, was built was built above Francis, Gaspee and Promenade Streets on the north side of the new station complex.

In 1892-93, the New York, New Haven, & Hartford Railroad built a 100 ft. deck truss railroad bridge, designed to carry twelve tracks at an angle over the Woonasquatucket River immediately northeast of Union Station. It consisted of twenty-seven trusses, each a modified Warren truss with verticals. The connections are pinned and the main supporting members consist of eyebars and riveted lattice girders. The lower chord of each truss contains five pair of eyebars pinned together. Most of the trusses were built square across the river, though the end truss on the south side is skewed to follow the line of the bridge. The deck consists of a solid flooring of six inch hard pine. The bridge covers an area of 47,000 sq ft and weighs 1,500 tons. The bridge, unique in R.I., is historically important because of the large number of trusses arranged in series. In 1975 the bridge was assessed as follows "The bridge is in poor repair, some of the pins are frozen, some of the lattice work is thoroughly rusted away, and in places rust has resulted in a loss of section.

In 1909, the engineering department of the New York, New Haven & Hartford Railroad under the direction of the chief engineer, Edward Gagel, built the Providence Station Viaduct to connect the Central Passenger Station and Canal Street. The viaduct joined with the old viaduct which carried the Boston tracks and diverged from it, crossing the Woonasquatucket and Moshassuck Rivers at oblique angles and Promenade, North Main, and Canal Streets at near-right angles. Designed to carry 5 to 7 tracks, the structure was

approximately 1200 feet long, and from 50 to 75 feet wide, rising about 20 feet above street level. It has a solid steel and concrete floor with long transverse and oblique plate girders up to 100 feet long, supported on vertical steel columns from 10' to 30' apart in straight and curved rows. This "remitted the arrangement of the tracks in any required location without reference to positions of the girders." The steel work was designed according to the 1901 railroad specifications with maximum unit stresses of 12,000 pounds tension and 10,000 pounds compression. The light overhead steel framework that supported the electrical wires no longer exists. "Owing to the connections of the old structure, the fixed location of curved and oblique lines of columns, and the very irregular outline of the floor plan and the grade which necessitated different elevations for nearly all of the columns, the structure is unusually irregular with scarcely any duplicate pieces."

Today, the city of Providence is again relocating the tracks and building a new station, this in conjunction with Amtrak's Northeast Corridor Improvement Program. Portions of the old viaduct have already been dismantled with the remainder to be taken down upon completion of the new right-of-way.

Transmitted by: Dan Clement, 1984.

Addendum to:
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Mid-Atlantic Region, National Park Service
Department of the Interior
Philadelphia, Pennsylvania 19106

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Location:	From I-95 from Amtrak Yard 17, extending over Gaspee and Francis Streets, Woonasquatucket River and Promenade Street, northward along the Moshassuck River to Smith Street, Providence, Rhode Island
Date of Construction:	1894
Present Owner:	Amtrak
Present Use:	Railroad viaduct and bridges
Significance:	The viaduct and the bridges contributed to the regional rail transportation network extending from New York City to Boston, Massachusetts, consolidated by the New York, New Haven & Hartford Railroad along the shoreline. This network was later extended to Washington, D. C., as part of the Northeast Corridor owned by Amtrak.
Project Information:	The Union Staton Viaduct will be demolished as part of the Northeast Corridor Improvement Project of the Federal Railroad Administration. Mitigative documentation prepared by DeLeuw, Cather/Parsons, Washington, D. C. for the U.S. Department of Transportation, September 1983.

For overview history and bibliography, see PROVIDENCE COVE LANDS,
HAER No. RI-24

Historical Information

The elevated rail line begins on earthen embankments to the west of the station at the I-95 overpass, continues for approximately one-half mile, and curves northward at the Woonasquatucket River. The Smith Street Bridge marks the termination of the viaduct. This feature allowed separation of rail from vehicular/pedestrian traffic within the city. Prior to its constructon, local citizens were alarmed over the number of injuries due to the few grade crossings within the city. This viaduct was also an attempt to eliminate public features of a barrier, or "Chinese Wall," between the city center and the new State House. However, even though Francis, Gaspee and Promenade Streets provided access, the visual barrier and deteriorating physical condition of the underpass have prompted many to call for elimination of the viaduct.

The viaduct remains a dominant feature today, since it separates the capitol from the business center in Providence. It was built, however, to alleviate nineteenth century urban transportation problems, especially through the use of grade separation and centralization of rail functions.